

DESCRIPTION

CLEANING TOOL AND HOLDING MEMBER USED FOR THE SAME

TECHNICAL FIELD

The present invention relates to a cleaning tool and a holding member thereof serving as a constitutional component thereof for holding a cleaning sheet to be used to clean furniture, electrical appliances, or the like.

BACKGROUND ART

As described in a following patent document No. 1, i.e. Japanese Patent Application Laid Open No. 2000-83883 for instance a hand wiper used as a facile cleaning tool for wiping away dust from furniture such as chests, electrical appliances such as personal computers and lighting fixtures, the interior walls of buildings, thresholds, head jambs or lintel, and so on is known. The hand wiper is constituted by a handle, a head portion, and a cleaning cloth. The handle is constituted by a grip portion and a support portion. The head portion is constituted by a central main body portion and a peripheral flexible portion thereof. An insertion portion is formed in the main body portion for inserting the handle, and the support portion of the handle is fitted into the insertion portion.

Further, as described in a patent documents No. 2, i.e.

Japanese Patent Application Laid Open No. 2002-165742, as an example, a member serving as a hand wiper holding member in which an attachment portion, a gripping portion, and an arm portion connecting thereof are incorporatively provided is known. The attachment portion is provided with connecting piece forming a pair extend bifurcately toward a tip end side, the arm portion extends obliquely upward from a base portion of the attachment portion, and the gripping portion is formed continuously at the upper end of the arm portion. The gripping portion is formed in a high position away from the lower face of the attachment portion and substantially parallel to the attachment portion. A cleaning tool is formed by attaching a cleaning sheet to the attachment portion of the holding member.

Patent document No. 1: Japanese Patent Application Laid Open No. 2000-83883, and

Patent document No. 2: Japanese patent Application Laid Open No. 2002-165742.

#### DISCLOSURE OF THE INVENTION

In the cleaning tools described in both Japanese Patent Application Laid Open Nos. 2000-83883 and 2002-165742, the length of the handle is only sufficient for the handle to be gripped by hand. As a result, recesses of portions that cannot

be reached by hand cannot be cleaned easily, and hence usability is poor.

Therefore, the inventors of the present invention have proposed a holding member for a cleaning tool formed with an elongatable handle member (Japanese Patent Application 2002-297845, corresponding to WO/2003/070080). As shown in Fig. 28A, a holding member 101 is attached such that a grip portion 102 and a branch portion 103 are foldable via a joint portion 104, and as shown in Fig. 28B, a cavity is provided in the interior of the grip portion 102, a support arm 105 is accommodated in the cavity, and the support arm 105 is slidably fitted into the grip portion 102 in the longitudinal direction.

As shown in Fig. 28B, in the holding member 101, the support arm 105 is caused to slide forward in the longitudinal direction relative to the grip portion 102, whereby the handle lengthens and the gap between the handle and the branch portion 103 increases. As a result, the distance between a wiping portion attached to the branch portion 103 and the grip portion 102 increases, enabling a portion beyond the reach of hand to be wiped easily.

However, although the handle of the cleaning tool using the holding member lengthens, in a case where the cleaning tool is inserted into a narrow gap, such as a gap between pieces of furniture, to clean the gap, the joint portion 104 cannot be inserted into the narrow gap when the cleaning sheet attached

to the branch portion 103 is inserted into the gap due to the thickness of the joint portion 104 stepped, and hence the cleaning sheet cannot reach the back of the gap, accordingly, it is impossible to clean this portion.

The present invention has been designed to solve the problems described above, and it is an object thereof to provide a cleaning tool which, when used to clean a narrow gap, is capable of exhibiting an adequate cleaning ability up to the back of the gap, and a holding member used in the cleaning tool.

A cleaning tool of the present invention is comprised of a cleaning sheet and a holding member for holding the cleaning sheet. The holding member comprises a handle member, a support arm provided slidably within the handle member, and a leg member connected to the support arm. The leg member is positioned substantially coplanar with the support arm. Providing the leg member and support arm to be substantially coplanar is not limited to a case in which the two components are perfectly coplanar, and signifies that a slight step may occur between the both components.

In the present invention, the support arm is provided in a position which does not project upward beyond the leg member, and hence a step which is large enough to be obvious is not formed at the connecting portion between the two.

The leg member is removably disposed to the support arm.

The handle member is comprised of a sheath portion for accommodating the support arm, and a grip portion provided in a higher position than the sheath portion. The grip portion is also provided in a higher position than the support arm.

A holding member of the present invention comprises a handle member, a support arm provided slidably within the handle member, and a leg member provided on the support arm. The leg member is positioned substantially coplanar with the support arm.

#### Effects of the invention:

In the cleaning tool of the present invention, the arm length of the holding member is able to elongate by the support arm, and the leg member is provided on the support arm such that the leg member is positioned substantially coplanar with the support arm. Hence, when a cleaning sheet is inserted into a narrow gap to clean the portion therein, the cleaning sheet can be inserted up to the back of the gap, enabling an increase in cleaning range and an improvement in cleaning ability.

Further, by providing the leg member on the support arm such that the leg member is positioned substantially coplanar with the support arm, the leg member can be inserted easily into a handle attachment portion of the cleaning sheet.

Further, in a case where the leg member is removably disposed to the support arm, the entire cleaning tool can be

housed in a compact manner when packaged or not in use by detaching the leg member from the support arm. Moreover, a plurality of types of leg members having different shapes and dimensions can be prepared and attached interchangeably, enabling the use of cleaning sheets having various shapes and dimensions.

In a case where the grip portion of the handle member is provided so as to project upward from the sheath portion, the grip portion is positioned above the support arm and leg member. Hence, the cleaning sheet attached to the holding member via the leg member can be pressed against a cleaning surface easily, and favorable operability is achieved when the cleaning tool is held by hand to perform cleaning.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a perspective view of a cleaning tool of the present invention, showing a state in which the extension length of a leg member from a handle member is shortened;

Fig. 1B is a perspective view of the cleaning tool of the present invention, showing a state in which the extension length of the leg member from the handle member is lengthened;

Fig. 2 is an exploded perspective view of a holding member shown in Figs, 1A and 1B;

Fig. 3 is a vertical sectional view of the handle member taken along a line A-A shown in Fig. 2;

Fig. 4 is a plan view of the handle member shown in Fig. 2;

Fig. 5 is a bottom view of the handle member shown in Fig. 2;

Fig. 6 is a vertical sectional view of the handle member taken along a line B-B shown in Fig. 2;

Fig. 7 is a vertical sectional view of the handle member taken along a line C-C shown in Fig. 2;

Fig. 8 is a side view of a support arm shown in Fig. 2;

Fig. 9 is a plan view of the support arm shown in Fig. 2;

Fig. 10 is a bottom view of the support arm shown in Fig. 2;

Fig. 11 is a vertical sectional view of the support arm taken along a line D-D shown in Fig. 2;

Fig. 12 is a vertical sectional view of the support arm taken along a line E-E shown in Fig. 2;

Fig. 13 is a vertical sectional view of the support arm taken along a line F-F shown in Fig. 2;

Fig. 14 is a plan view of a leg member shown in Fig. 2;

Fig. 15 is a bottom view of the leg member shown in Fig. 2;

Fig. 16 is a side view of the leg member shown in Fig. 2;

Fig. 17 is a vertical sectional view of the leg member taken along a line G-G shown in Fig. 2;

Fig. 18 is a back view of the leg member shown in Fig. 2;

Fig. 19 is a vertical sectional view of the leg member taken along a line H-H shown in Fig. 2;

Fig. 20 is a vertical sectional view of the leg member taken along a line I-I shown in Fig. 2;

Fig. 21 is a sectional view showing a state in which a connecting piece of the leg member of the holding member shown in Fig. 1 is fitted into a receiving member of the support arm;

Fig. 22 is a side view showing a part of other embodiment of the leg member;

Fig. 23 is a sectional view showing another embodiment of the leg member;

Fig. 24 is a perspective view showing an external appearance of a cleaning tool formed by fitting a cleaning sheet to the leg member of the holding member shown in Fig. 1;

Fig. 25 is a plan view showing another embodiment of the leg member;

Fig. 26 is a bottom view of the leg member shown in Fig. 25;

Fig. 27 is a side view of the leg member shown in Fig. 25;



Fig. 28A is a perspective view of a conventional cleaning tool showing a state in which the extension length of a branch portion from a grip portion is shortened; and

Fig. 28B is a perspective view of the conventional cleaning tool showing a state in which the extension length of the branch portion from the grip portion is lengthened.

#### BEST MODE FOR CARRYING OUT THE INVENTION

Fig. 24 shows an embodiment of a cleaning tool according to the present invention. Figs. 1A and 1B are perspective views respectively showing a holding member used for the cleaning tool of the present invention, and Fig. 2 is an exploded perspective view showing the holding member. A holding member 1 is constituted by a leg member 2 for holding a cleaning sheet, a support arm 3 which supports and fixes the leg member 2, and a handle member 4 which supports the support arm 3 slidably. The leg member 2 is connected to a tip end of the support arm 3 so as to be positioned substantially coplanar with the support arm 3. In other words, the support arm 3 is provided in a position which does not project upward beyond the leg member 2. The support arm 3 and leg member 2 are provided so as to slide incorporatively in a horizontal direction.

The leg member 2 is constituted by bifurcated two parallel holding portions 21, while a connecting piece 22 for connecting

the leg member 2 to the end of the support arm 3 is provided on the end portion of the leg member 2.

The support arm 3 is constituted by a sliding portion 31 formed from an elongated flat plate member, and a receiving member 32 to which the aforementioned connecting piece 22 is fitted. The receiving member 32 is provided on the end of the support arm 3.

As shown in Fig. 3, the handle member 4 comprises a sheath portion 41 which is formed with a hollow interior in order to provide a space in which the sliding portion 31 of the support arm 3 can be accommodated, and a grip portion 42 connected to the sheath portion 41 and provided so as to project upward from the sheath portion 41. The end portion of the sheath portion 41 is provided with an opening 45 into which the sliding portion 31 of the support arm 3 is inserted (see Fig. 3).

By fitting and fixing the connecting piece 22 of the leg member 2 in the receiving member 32 of the support arm 3, the leg member 2 is connected to the support arm 3. By releasing the engagement between the connecting piece 22 and receiving member 32, the leg member 2 can be removed from the support arm 3, and thus the support arm 3 and leg member 2 are removably connected.

An end 34 of the support arm 3 is inserted into the interior of the sheath portion 41 of the handle member 4 through the opening,

i.e. an insertion port 45 formed in the sheath portion 41, and thus the support arm 3 is accommodated in the interior of the sheath portion 41. The sheath portion 41 has sufficient interior space to accommodate the entire sliding portion 31 of the support arm 3. When the support arm 3 is pulled outward, the support arm 3 slides outward from the interior of the sheath portion 41. Thus the extension length of the support arm 3 from the handle member 4 can be lengthened and shortened.

By connecting the support arm 3 and leg member 2 removably, the leg member 2 can be removed from the support arm 3 when the cleaning tool is packaged or not in use, and hence the entire cleaning tool can be housed in a compact manner, which is convenient for storage, transportation, and so on. Moreover, a plurality of types of leg members having different shapes and dimensions can be prepared and attached interchangeably. In this case, a leg member having an optimum shape for a certain type of cleaning sheet can be selected and used, and thus cleaning sheets having various shapes and dimensions may be employed.

It is noted that the support arm 3 and leg member 2 may be formed incorporatively and inseparably so as not to be separated thereof.

In an aspect shown in Fig. 1A, the sliding portion 31 of the support arm 3 is accommodated in the interior of the sheath portion 41, and only the receiving member 32 is exposed to the

front of the handle member 4. In other words, this aspect shows a state in which the extension length of the leg member 2 from the handle member 4 is shortened.

When the support arm 3 is pulled forward from this state, the support arm 3 slides through the interior of the sheath portion 41 and extends outward as shown in Fig. 1B. This aspect shows a state in which the extension length of the leg member 2 from the handle member 4 is lengthened.

As shown in Fig. 2, when assembling the holding member, the end 34 of the support arm 3 is inserted forcibly in the opening 45 in the handle member 4. The horizontal width of a stopper 35 provided at the end portion 34 of the support arm 3 is formed to be slightly greater than the horizontal width of the opening 45, but in a case where the support arm 3 and handle member 4 are formed from an elastic material such as plastic, elastic deformation is applied to the stopper 35 when the support arm 3 is inserted forcibly, and hence the support arm 3 can be inserted into the interior space of the sheath portion 41.

Plastic, metal, wood, and so on may be used as the material for the handle member 4, support arm 3, and leg member 2 constituting the holding member 1, but plastic is preferable due to its light weight and reasonable price. When plastic is used as a material, a polyolefin resin such as polyethylene resin or polypropylene resin is preferable due to its malleability.

As shown in Fig. 14, the leg member 2 for attaching a cleaning sheet is constituted by the bifurcated two parallel holding portions 21, and the connecting piece 22 formed so as to project from the base end portion of the leg member 2. As shown in Fig. 20, the holding portion 21 has a substantially tubular form cut in half in a cross sectional view. It is noted that numeral 25 shows a reinforcing rib provided integrally on the bottom of the holding portion in the longitudinal direction.

Outwardly protruding convex portions 27 are provided on the front surface of the holding portions 21 at predetermined intervals in the longitudinal direction. As is evident from a plan view, bottom view, and side view of the leg member 2 (see Figs. 14 through 16), the convex portions 27 are formed as projections which protrude gradually toward the base end portion of the leg member 2.

When a cleaning sheet is attached to the holding member 1, the leg member 2 is inserted into an attachment portion of the cleaning sheet, and during cleaning, the leg member 2 must be prevented from slipping out of the attachment portion and dropping the cleaning sheet. In the present invention, a plurality of convex portions 27 formed on the leg member 2 of the holding member act such that a latching force is applied in the direction in which the leg member 2 slips out from the attachment portion of the cleaning sheet, and hence the leg member

2 is prevented from slipping out from the attachment portion, and is prevented from dropping the cleaning sheet during cleaning.

On the other hand, the leg member 2 can be inserted smoothly into the attachment portion of the cleaning sheet.

As shown in Fig. 14, a collar portion 12 is provided between the holding portions 21 and the connecting piece 22 of the holding member 1. The collar portion 12 is provided above and below the holding member 1 as shown in Fig. 16. As shown in Fig. 21, when the connecting piece 22 of the leg member 2 is fitted into a recessed fitting groove 38 in the receiving member 32 of the support arm 3, the collar portion 12 and receiving member 32 contact each other in the same plane so that no surface unevenness occurs.

The receiving member 32 of the support arm 3 has a horizontal width which is formed to be greater than that of the sliding portion 31, as shown in Fig. 9, and the interior thereof is formed as the recessed fitting groove 38 into which the connecting piece 22 of the leg member 2 is inserted. A latch hole 37 for accommodating a projection provided on the connecting piece 22 of the support arm is provided in the bottom of the receiving member 32. As shown in Fig. 13, convex bars 11 running along the longitudinal direction are provided on the lower face of the recessed fitting groove 38 in the receiving member 32.

Concave grooves 23 (see Figs. 15 and 18) provided in the lower face of the connecting piece 22 of the leg member 2 fit onto the convex bars 11.

As shown in Figs. 16 through 19, a latch projection 24 formed in a downwardly projecting hemispherical shape is provided on the connecting piece 22 of the holding member 2. As shown in Fig. 15, the periphery of the projection 24 is cut away into a U shape to provide the projection 24 with elasticity. As shown in Fig. 21, when the connecting piece 22 is inserted into the recessed fitting groove 38 provided in the receiving member 32 of the support arm 3, the projection 24 passes through the recessed fitting groove 38 and is fitted fixedly into the latch hole 37 provided in the receiving member 32. As a result, the leg member 2 does not become disengaged from the support arm 3 when the force of a normal cleaning operation or the like is applied, but when the leg member 2 is pulled with a slightly greater force, the projection 24 deforms elastically and disengages from the latch hole 37 such that the leg member 2 can be removed from the support arm 3.

As shown in Fig. 8, the support arm 3 is provided with a latch button 33 formed to project upward at a near portion of both the front end portion and rear end portion of the elongated sliding portion 31. As shown in Fig. 9, the latch buttons 33 are provided on the upper face of an elastic plate 36 formed

by cutting away the periphery of the latch buttons 33 into a C shape, and as shown in Fig. 11, a cavity V is provided below the latch buttons 33 so that the latch buttons 33 can be pushed downward from above, but return to their original positions when released.

As noted above, the stopper 35 is provided at the end portion 34 of the sliding portion 31. As shown in Figs. 8 and 9, the stopper 35 has a projecting form which extends outward from the side faces of the sliding portion. When the support arm 3 is caused to slide forward from the sheath portion 41 of the handle member 4 in a withdrawal direction, the stopper 35 prevents the support arm 3 from sliding out from the sheath portion 41 and becoming disengaged therefrom. The bottom surface of the sliding portion 31 is hollowed out and reinforced by a rib 39 (see Figs. 10, 12).

As shown in Fig. 3, the grip portion 42 is provided on the handle member 4 via a connecting portion 43 which projects upward and to the rear from the front of the sheath portion 41, and the grip portion 42 is connected to the rear end of the sheath portion 41. However, the handle member 4 may be formed without the connecting portion 43 such that the grip portion 42 alone rises up from the sheath portion 41.

As shown in Fig. 3, the interior of the sheath portion 41, grip portion 42, and connecting portion 43 of the handle



member 4 is hollow. A space W in the interior of the sheath portion 41 is formed to be large enough to accommodate the sliding portion 31. As shown in Fig. 4, the handle member 4 is also provided with a through hole 44 into which the latch button 33 of the sliding portion 31 is fitted.

As shown in Fig. 7, the through hole 44 is formed with a diameter which increases gradually toward the upper face of the sheath portion 41 so that the latch button 33 engaged therewith can be pressed easily by a finger. As shown in Fig. 5, notch portions 46 are provided in three locations in the bottom surface of the sheath portion 41 of the handle member 4. As described above, the grip portion 42 is provided in a higher position than the sheath portion 41, and as shown in Fig. 6, a space 47 for inserting a hand is provided between the grip portion 42 and sheath portion 41.

As shown in Figs. 2 and 3, the lower face s of the grip portion 42 of the handle member 4 is provided with wave-form contours in the longitudinal direction so that the grip portion can be gripped easily by hand. Although not shown specifically in the drawings, contours following the shape of the fingers may be provided on the upper face and side faces of the grip portion 42 so that the upper face and side faces can also be gripped easily by hand, similarly to the lower face.

The leg member 2 is formed with a semicircular shape in

the vertical cross-sectional view, but may be formed with a circular in the vertical cross-sectional view, as shown in Figs. 22 and 23. In this case, the projections 27 which prevent from slipping are provided on the periphery of the leg member 2.

The leg member 2 may take a form other than a bifurcately or two-pronged form. For example, as shown in Figs. 25 to 27, the leg member may be formed in a framework form constituted by a combination of framework or bony members. This leg member is used to attach a mitten-form cleaning sheet. In this case, a rib 28 is provided around the peripheral edge of the rear surface (see Fig. 26). Also, as shown in Fig. 27, the connecting piece 22 is formed in a slightly higher position than the holding portion 21.

In the holding member 1 shown in Fig. 1A, the entire sliding portion 31 of the support arm 3 is accommodated in the sheath portion 41 and a front latch button 33a is fitted into the through hole 44. The latch button 33a should be fitted into through hole 44 to a degree that prevents disengagement when the holding member is moved in a horizontal direction during cleaning. When the receiving member 32 of the support arm 3 is held between the fingers and pulled forward while pressing the latch button 33a down, the support arm 3 and leg member 2 move forward integrally. The support arm 3 can be withdrawn until the stopper 35 abuts against the opening portion 45 of the sheath portion 41. When

the support arm 3 has been withdrawn to a maximum extent, the stopper 35 stops at the opening 45, and therefore the support arm 3 does not become completely disengaged. In this state, as shown in Fig. 1B, a rear latch button 33b is fitted into the throughhole 44 in the sheath portion 41 such that during cleaning, the support arm 3 is held in a maximum length position integrally with the leg member 2. Accordingly, cleaning work can be performed reliably in places that cannot be reached by hand. To shorten the protrusion length of the leg member 2 from the handle member 4, the latch button 33b is pressed similarly to release the engagement thereof, whereupon the support arm 3 is inserted into and accommodated in the sheath portion 41.

The cleaning sheet attached to the leg member 2 is constituted by a mop, a sheet, or a similar object that can be attached to and detached from the leg member 2 and is capable of wiping away dirt, dust, and so on. As shown in Fig. 24, a cleaning sheet 5 is provided with a handle fitting portion 52 on its upper side and a wiping portion 51 on its lower side. As shown in the drawings, the handle fitting portion 52 is formed in a bag form having openings in two locations, and by inserting the leg member 2 of the holding member 1 through the openings in the handle fitting portion 52, the cleaning sheet 5 can be held on the holding member 1 and used in this state as a cleaning tool 6. When the cleaning sheet becomes dirty, it can be removed

from the handle attachment portion 52 and replaced with a new cleaning sheet.

The cleaning sheet 5 include a sheet constituted, as examples, by a sheet-form fiber bundle formed by bundling together a large number of fibers and a sheet having a rectangular or strip-form portion at one side thereof, and a sheet constituted by non-woven fabric, and so on. The fibers constituting the sheet-form fiber bundle may be natural fibers such as cotton or wool, synthetic fibers such as polyethylene, polypropylene, polyethylene terephthalate, nylon, and polyacrylic, or compound fibers such as core-in-sheath fibers, sea-island fibers, and side-by-side fibers, for example. The sheet having the strip-form portion, may be made from, for examples, paper, synthetic resin sheet, non-woven fabric, and so on. As the non-woven fabric stated above, spun lace non-woven fabric, spun-bonded non-woven fabric, thermobonded non-woven fabric, air-through non-woven fabric, point-bonded non-woven fabric, and so on are available. As the fibers constituting the non-woven fabric, natural fibers, synthetic fibers, compound fibers, and so on are available. The non-woven fabric preferably has a basic weight of approximately 20 to 100g/m<sup>2</sup>.